

# PATENT ABSTRACTS OF JAPAN

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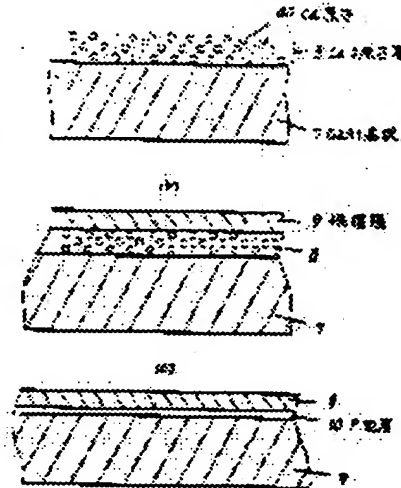
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## (54) METHOD OF DOPING IMPURITY TO SEMICONDUCTOR

### (57)Abstract:

**PURPOSE:** To make it possible to obtain an impurity added layer which is extremely thin of 500 $\text{\AA}$  or less with excellent control by having an LB film deposition process, an organic substance removal process, and an impurity diffusion process.

**CONSTITUTION:** In the first process, a desired number of LB films containing Cd atom 40 which serves as a dopant are deposited on the surface of a GaAs substrate 7 by a Langmuir-Blodgett's technique. After passing through the second process in which the three molecular layers on the substrate 7 thus obtained are processed in O<sub>2</sub> plasma, hydrogen carbonate chains of hydrophobic group are removed. Thus, an atomic layer 8 composed of Cd atom 40 can be formed on the substrate 7. In the third process, after forming a protective layer 9 made of SiO<sub>2</sub>, an insulation film such as SiO<sub>2</sub> or SiN, etc., or a high-melting point metal layer such as WSi on the atomic layer 8, it is annealed in high temperatures and a p-type layer 10 of Cd diffusion is formed. Since the p-type layer 10 thus obtained is formed from impurity atoms of several atom layers, an extremely thin film of 500 $\text{\AA}$  or thinner can be formed.



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